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BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			CHEN, SHIH CHAO	
			ART UNIT	PAPER NUMBER
			2821	

DATE MAILED: 07/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary

Application No.

10/724,729

Applicant(s)

UMEHARA ET AL.

Examiner

Shih-Chao Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2003.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-102 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☒ Claim(s) 73-82 and 84-96 is/are allowed.
 6) ☒ Claim(s) 1-15, 19, 26-29, 31, 37, 39-51, 55 and 61-67 is/are rejected.
 7) ☒ Claim(s) 16-18, 20-24, 30, 32-36, 38, 52-54, 56-60, 68-72, 83 and 97-102 is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 02 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date 12/2/03.
 4) ☐ Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) ☐ Notice of Informal Patent Application (PTO-152)
 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the fourth antenna pattern in claims 17, 53 and 83 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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Claim Objections

2. Claims 31-32, 35, 67-68, 71, 97-98 and 101 are objected to because of the following informalities: "a circuit board" should be changed to --the circuit board--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:
- The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 30 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claim 30 recites the limitation "the circuit element" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-3, 5-11, 15, 19, 26-31, 37, 39, 41-47, 51, 55 and 62-67 are rejected under 35 U.S.C. 102(e) as being anticipated by Flint et al. (U.S. Patent No. 6,686,886).

Regarding claim 1, Flint et al. teaches in figures 1-21 a pattern antenna comprising: a first antenna pattern [702, 703, 705] acting as a driven element and having an elongate pattern [703] that is approximately in parallel with an edge of circumference of a grounding conductor portion [701] provided on a circuit board (i.e. PCB, See col. 4, lines 52-54); and a feeding pattern [705] that connects a feeding point provided on the circuit board to the elongate pattern; a second antenna pattern [708, 704] acting as a passive element, so formed as to be in close proximity to the first antenna pattern by surrounding the first antenna pattern, and having an elongate pattern [708] that is approximately in parallel with the edge of circumference of the grounding conductor portion; and a grounding pattern [704] that connects the grounding conductor portion to the elongate pattern; wherein the pattern antenna is mounted on the circuit board.

Regarding claim 2, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein the first antenna pattern [702, 703, 705] is an inverted-F-shaped antenna pattern, which is further provided with a grounding pattern [801] that is formed at a different position from the feeding pattern [705], and which connects the grounding conductor portion [701] to the elongate pattern, and wherein the second antenna pattern [708, 704] is an inverted-L-shaped antenna pattern.

Regarding claim 3, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein the first antenna pattern [702, 703, 801] is a loop-type antenna pattern, which is further provided with a grounding pattern [801] that is formed at a different position from the feeding pattern [705] or the grounding pattern [702], and

which connects the grounding conductor portion [701] to the elongate pattern [703], and wherein the second antenna pattern [708, 704] is an inverted-L-shaped antenna pattern.

Regarding claim 5, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein, when frequencies for purpose of reception by the pattern antenna are f_1 and f_2 and wavelengths corresponding to the frequencies f_1 and f_2 are λ_1 and λ_2 , a path length of the first antenna pattern is more than $0.1\lambda_1$ and $0.4\lambda_1$ or less, and a path length of the second antenna pattern is more than $0.1\lambda_2$ and $0.4\lambda_2$ or less (See FIG. 10-12 & col. 4, lines 65-67 and col. 5, lines 1-40).

Regarding claim 6, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein, when a center frequency of a frequency band for reception by the pattern antenna is f_0 and a wavelength corresponding to the frequency f_0 is λ_0 , a path length of the first antenna pattern is more than $0.3\lambda_0$ and $0.5\lambda_0$ or less, and a path length of the second antenna pattern is more than $0.4\lambda_0$ and $0.7\lambda_0$ or less (See FIG. 10-12 & col. 4, lines 65-67 and col. 5, lines 1-40).

Regarding claim 7, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein, when a center frequency of a frequency band for reception by the pattern antenna is f_0 and a wavelength corresponding to the frequency f_0 is λ_0 , a conductor width of the first antenna pattern is more than $0.005\lambda_0$ and $0.05\lambda_0$ or less (See FIG. 10-12 & col. 4, lines 65-67 and col. 5, lines 1-40).

Regarding claim 8, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein, when a center frequency of a frequency band for reception by the pattern antenna is f_0 and a wavelength corresponding to the frequency f_0 is λ_0 , a

conductor width of the second antenna pattern is more than $0.005\lambda_0$ and $0.15\lambda_0$ or less (See FIG. 10-12 & col. 4, lines 65-67 and col. 5, lines 1-40).

Regarding claim 9, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein, when a center frequency of a frequency band for reception by the pattern antenna is f_0 and a wavelength corresponding to the frequency f_0 is λ_0 , a space between the first antenna pattern and the second antenna pattern is more than $0.002\lambda_0$ and $0.04\lambda_0$ or less (See FIG. 10-12 & col. 4, lines 65-67 and col. 5, lines 1-40).

Regarding claim 10, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein, when a center frequency of a frequency band for reception by the pattern antenna is f_0 and a wavelength corresponding to the frequency f_0 is λ_0 , a height from the grounding conductor portion to the top edge of the second antenna pattern is more than $0.1\lambda_0$ and $0.3\lambda_0$ or less (See FIG. 10-12 & col. 4, lines 65-67 and col. 5, lines 1-40).

Regarding claim 11, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein a resonance frequency of the first antenna pattern [702, 703, 705] differs from a resonance frequency of the second antenna pattern [708, 704].

Regarding claim 15, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein, when layers comprising the circuit board include a surface of the circuit board, all the antenna patterns are formed on a same layer of the circuit board.

Regarding claim 19, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein, in at least one the antenna patterns, a conductor width [W]

of at least one of the patterns having the antenna pattern is different from the conductor width of the other patterns included the antenna pattern (See FIG. 10, 10A).

Regarding claim 26, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein at least one of the elongate patterns [702, 703, 801] of any of the antenna patterns is shaped in a loop at an open end thereof (See FIG. 8).

Regarding claim 27, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein at least one of the elongate patterns of any of the antenna patterns is shaped in a patch which has a wider conductor width on an open end thereof (See FIG. 10A).

Regarding claim 28, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein at least one of the elongate patterns of any of the antenna patterns is bent on an open end thereof (See FIG. 8-9).

Regarding claim 29, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein at least one of the antenna patterns is partly or entirely soldered.

Regarding claim 30, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein a shield board [1401] covering a circuit element provided on the grounding conductor portion [701].

Regarding claim 31, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 1, wherein a circuit element is mounted on the circuit board (i.e. PCB) for

circuitry different from the circuit board, and wherein the circuit board having the antenna patterns [702, 703], [704, 708] formed thereon is electrically connected to the circuit board for circuitry by way of a coaxial cable [706].

Regarding claim 37, Flint et al. teaches in figures 1-21 a pattern antenna comprising: a first antenna pattern [704, 708] acting as a passive element and having an elongate pattern [708] that is approximately in parallel with an edge of circumference of a grounding conductor portion [701] provided on a circuit board (i.e. PCB); and a grounding pattern [704] that connects the grounding conductor portion to the elongate pattern; a second antenna pattern [702, 703] acting as a driven element, so formed as to be in close proximity to the first antenna pattern by surrounding the first antenna pattern, and having an elongate pattern [703] that is approximately in parallel with the edge of circumference of the grounding conductor portion; and a feeding pattern [705] that connects a feeding point provided on the circuit board to the elongate pattern and; wherein the pattern antenna is mounted on the circuit board.

Regarding claim 39, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein the first antenna pattern [704, 708, 901] is a loop-type antenna pattern, which is further provided with a grounding pattern [901] that is formed at a different position from the grounding pattern, and which connects the grounding conductor portion [701] to the elongate pattern [708] (See FIG. 9), and wherein the second antenna pattern [702, 703] is an inverted-L-shaped antenna pattern.

Regarding claim 41, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein, when frequencies for purpose of reception by the pattern antenna are f_1 and f_2 and wavelengths corresponding to the frequencies f_1 and f_2 are λ_1 and λ_2 , a path length of the first antenna pattern is more than $0.1\lambda_1$ and $0.4\lambda_1$ or less, and a path length of the second antenna pattern is more than $0.1\lambda_2$ and $0.4\lambda_2$ or less (See FIG. 10-12 & col. 4, lines 65-67 and col. 5, lines 1-40).

Regarding claim 42, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein, when a center frequency of a frequency band for reception by the pattern antenna is f_0 and a wavelength corresponding to the frequency f_0 is λ_0 , a path length of the first antenna pattern is more than $0.3\lambda_0$ and $0.5\lambda_0$ or less, and a path length of the second antenna pattern is more than $0.4\lambda_0$ and $0.7\lambda_0$ or less (See FIG. 10-12 & col. 4, lines 65-67 and col. 5, lines 1-40).

Regarding claim 43, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein, when a center frequency of a frequency band for reception by the pattern antenna is f_0 and a wavelength corresponding to the frequency f_0 is λ_0 , a conductor width of the first antenna pattern is more than $0.005\lambda_0$ and $0.05\lambda_0$ or less (See FIG. 10-12 & col. 4, lines 65-67 and col. 5, lines 1-40).

Regarding claim 44, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein, when a center frequency of a frequency band for reception by the pattern antenna is f_0 and a wavelength corresponding to the frequency f_0 is λ_0 , a conductor width of the second antenna pattern is more than $0.005\lambda_0$ and $0.15\lambda_0$ or less (See FIG. 10-12 & col. 4, lines 65-67 and col. 5, lines 1-40).

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Regarding claim 45, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein, when a center frequency of a frequency band for reception by the pattern antenna is f_0 and a wavelength corresponding to the frequency f_0 is λ_0 , a space between the first antenna pattern and the second antenna pattern is more than $0.002\lambda_0$ and $0.04\lambda_0$ or less (See FIG. 10-12 & col. 4, lines 65-67 and col. 5, lines 1-40).

Regarding claim 46, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein, when a center frequency of a frequency band for reception by the pattern antenna is f_0 and a wavelength corresponding to the frequency f_0 is λ_0 , a height from the grounding conductor portion to the top edge of the second antenna pattern is more than $0.1\lambda_0$ and $0.3\lambda_0$ or less (See FIG. 10-12 & col. 4, lines 65-67 and col. 5, lines 1-40).

Regarding claim 47, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein a resonance frequency of the first antenna pattern differs from a resonance frequency of the second antenna pattern.

Regarding claim 51, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein, when layers comprising the circuit board (i.e. PCB) include a surface of the circuit board, all the antenna patterns are formed on a same layer of the circuit board.

Regarding claim 55, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein, in at least one of the antenna patterns, a

conductor width of at least one of the patterns having the antenna pattern is different from the conductor width of the other patterns included the antenna pattern (See FIG. 10A).

Regarding claim 62, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein at least one of the elongate patterns of any of the antenna patterns is shaped in a loop at an open end thereof (See FIG. 8-9).

Regarding claim 63, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein at least one of the elongate patterns of any of the antenna patterns is shaped in a patch which has a wider conductor width on an open end thereof (See FIG. 10A).

Regarding claim 64, Flint et al. teaches in figures 1-21 a as claimed in claim 37, wherein at least one of the elongate patterns of any of the antenna patterns is bent on an open end thereof (See FIG. 8-9).

Regarding claim 65, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein at least one of the antenna patterns is partly or entirely soldered.

Regarding claim 66, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein a circuit element is mounted on the circuit board (i.e. PCB), and wherein a shield board [1401] covering the circuit element is provided on the grounding conductor portion [701].

Regarding claim 67, Flint et al. teaches in figures 1-21 a pattern antenna as claimed in claim 37, wherein a circuit element is mounted on the circuit board (i.e. PCB)

for circuitry different from the circuit board, and wherein the circuit board having the antenna patterns formed thereon is electrically connected to the circuit board for circuitry by way of a coaxial cable [706].

8. Claims 1, 4, 12-14, 25, 37, 40, 48-50 and 61 are rejected under 35 U.S.C. 102(e) as being anticipated by Andersson (U.S. Pub. No. 2005/0110692 A1).

Regarding claim 1, Andersson teaches in figures 1-4 a pattern antenna comprising: a first antenna pattern [2] acting as a driven element and having an elongate pattern that is approximately in parallel with an edge [21] of circumference of a grounding conductor portion [20] provided on a circuit board [41]; and a feeding pattern [3] that connects a feeding point provided on the circuit board to the elongate pattern; a second antenna pattern [5] acting as a passive element, so formed as to be in close proximity to the first antenna pattern by surrounding the first antenna pattern, and having an elongate pattern that is approximately in parallel with the edge of circumference of the grounding conductor portion; and a grounding pattern [7] that connects the grounding conductor portion to the elongate pattern; wherein the pattern antenna is mounted on the circuit board.

Regarding claims 4 and 40, Andersson teaches in figures 1-4 a pattern antenna, Wherein both the first antenna pattern [2] and the second antenna pattern [5] are inverted-L-shaped antenna patterns.

Regarding claims 12 and 48, Andersson teaches in figures 1-4 a pattern antenna, further comprising: at least one of third antenna patterns [6], that is installed

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in close proximity to other antenna patterns [2, 5] and is so formed as an inverted-L-shaped antenna pattern surrounding the other antenna patterns, having an elongate pattern approximately in parallel with the edge [21] of circumference of the grounding conductor portion [20] of the circuit board [41] and a grounding pattern [8] connecting the elongate pattern to the grounding conductor portion, and that acts as a passive element.

Regarding claims 13 and 49, Andersson teaches in figures 1-4 a pattern antenna, wherein a resonance frequency of the third antenna pattern [6] is approximately the same as a resonance frequency of the first antenna pattern [2] or a resonance frequency of the second antenna pattern [5].

Regarding claims 14 and 50, Andersson teaches in figures 1-4 a pattern antenna, wherein a resonance frequency of at least one of the third antenna patterns [6] is different from resonance frequencies of the first and the second antenna patterns [2, 5].

Regarding claims 25 and 61, Andersson teaches in figures 1-4 a pattern antenna, wherein, in at least one of the antenna patterns, at least one of the patterns having the antenna pattern [2] is partly formed in a meandering shape [9].

Regarding claim 37, Andersson teaches in figures 1-4 a pattern antenna comprising: a first antenna pattern [5] acting as a passive element and having an elongate pattern that is approximately in parallel with an edge [21] of circumference of a grounding conductor portion [20] provided on a circuit board [41]; and a grounding pattern [3] that connects the grounding conductor portion to the elongate pattern; a

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second antenna pattern [2] acting as a driven element, so formed as to be in close proximity to the first antenna pattern by surrounding the first antenna pattern, and having an elongate pattern that is approximately in parallel with the edge of circumference of the grounding conductor portion; and a feeding pattern [3] that connects a feeding point provided on the circuit board to the elongate pattern and; wherein the pattern antenna is mounted on the circuit board.

Allowable Subject Matter

9. Claims 73-82 and 84-96 are allowed.
10. Claims 16, 18, 20-24, 32-36, 38, 52, 54, 56-60, 68-72 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
11. The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claims 73-82 and 84-96 is the inclusion of the limitations of the first antenna pattern and the second antenna pattern are formed on different layers; and the first antenna pattern and the second antenna pattern are so formed as to overlap each other. It is these limitations found in each of the claims, as it is claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Correspondence

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-Chao Chen whose telephone number is (571) 272-1819. The examiner can normally be reached on Monday-Friday from 7 AM to 4:30 PM, First Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shih-Chao Chen
Primary Examiner
Art Unit 2821

shih-chao chen
SHIH-CHAO CHEN
PRIMARY EXAMINER

SXC
July 12, 2005